WEST Search History

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DATE: Saturday, April 17, 2004

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ	
☐	L15	L14 and (alumina or silica or titania or zirconia or alumino-silicate or chromic oxide or chromia)	49
☐	L14	L13 not l7 not l8 not l5 not l6	74
☐	L13	acylation with aromatic and (perfluorina$4 or Nafion)	87
		DB=PGPB,USPT; THES=ASSIGNEE; PLUR=YES; OP=ADJ	
☐	L12	acylation with aromatic and (perfluorina$4 or Nafion)	79
☐	L11	4454350.pn.	1
☐	L10	L8 and nafion	0
☐	L9	l8 and perfluorinated	0
☐	L8	L7 not l5 not l4	14
☐	L7	benzoyl chloride with xylene and acylation	28
☐	L6	l5 not l4	4
☐	L5	benzoyl chloride with xylene same acylation	14
☐	L4	benzoyl chloride with xylene same PFIEP	10
☐	L3	benzoyl chloride with xylene same nafion	0
☐	L2	l1 and Nafion	0
☐	L1	(acylation with aromatic).ti.	23

END OF SEARCH HISTORY

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TERMINAL (ENTER 1, 2, 3, OR ?):2


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 NEWS  1          Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2          "Ask CAS" for self-help around the clock
 NEWS  3  JAN 27  Source of Registration (SR) information in REGISTRY updated
                  and searchable
 NEWS  4  JAN 27  A new search aid, the Company Name Thesaurus, available in
                  CA/CAplus
 NEWS  5  FEB 05  German (DE) application and patent publication number format
                  changes
 NEWS  6  MAR 03  MEDLINE and LMEDLINE reloaded
 NEWS  7  MAR 03  MEDLINE file segment of TOXCENTER reloaded
 NEWS  8  MAR 03  FRANCEPAT now available on STN
 NEWS  9  MAR 29  Pharmaceutical Substances (PS) now available on STN
 NEWS 10  MAR 29  WPIFV now available on STN
 NEWS 11  MAR 29  No connect hour charges in WPIFV until May 1, 2004
 NEWS 12  MAR 29  New monthly current-awareness alert (SDI) frequency in RAPRA

 NEWS EXPRESS  MARCH 31 CURRENT WINDOWS VERSION IS V7.00A, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 13 APRIL 2004
 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
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FILE 'HOME' ENTERED AT 18:51:55 ON 17 APR 2004

=> file reg
COST IN U.S. DOLLARS                              SINCE FILE       TOTAL
                                                       ENTRY     SESSION
FULL ESTIMATED COST                                     0.21        0.21

FILE 'REGISTRY' ENTERED AT 18:52:05 ON 17 APR 2004
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STRUCTURE FILE UPDATES:   16 APR 2004  HIGHEST RN 676095-08-2
DICTIONARY FILE UPDATES:  16 APR 2004  HIGHEST RN 676095-08-2

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

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  conducting SmartSELECT searches.

Crossover limits have been increased.  See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html

=> s acyl halide
         21406 ACYL
             3 ACYLS
         21406 ACYL
                 (ACYL OR ACYLS)
            41 HALIDE
            35 HALIDES
            76 HALIDE
                 (HALIDE OR HALIDES)
L1           0 ACYL HALIDE
                 (ACYL(W)HALIDE)

=> e acyl bromide/cn
E1             1      ACYCLOVIR VALERATE/CN
E2             1      ACYCLOVIR-B-CYCLODEXTRIN COMPLEX (1:1)/CN
E3             0 --> ACYL BROMIDE/CN
E4             1      ACYL CARRIER PHOSPHODIESTERASE-LIKE PROTEIN (XANTHOMONAS AXO
                      NOPODIS CITRI STRAIN 306 GENE XAC3773)/CN
E5             1      ACYL CARRIER PROTEIN (405 AA); FATTY ACID SYNTHETASE DOMAIN
                      (RATTUS NORVEGICUS CLONE LAMBDA FAS1 AND LAMBDA FAS4.)/CN
E6             1      ACYL CARRIER PROTEIN (ACP SEQUENCE HOMOLOG) (STREPTOMYCES ST
                      RAIN AM-7161 GENE MED-ORF23 SEQUENCE HOMOLOG)/CN
E7             1      ACYL CARRIER PROTEIN (ACP) (PROCHLOROCOCCUS MARINUS PASTORIS
                       STRAIN MED4 GENE ACPP,ACP)/CN
E8             1      ACYL CARRIER PROTEIN (ACP) (PROCHLOROCOCCUS MARINUS STRAIN M
                      IT9313 GENE ACPP,ACP)/CN
E9             1      ACYL CARRIER PROTEIN (ACP) (SYNECHOCOCCUS STRAIN WH8102 GENE
                       ACPP,ACP)/CN
E10            1      ACYL CARRIER PROTEIN (ACP) (WOLINELLA SUCCINOGENES STRAIN DS
                      MZ 1740 GENE ACPP)/CN
E11            1      ACYL CARRIER PROTEIN (ACP):PHOSPHOPANTETHEINE ATTACHMENT SIT
                      E (NITROSOMONAS EUROPAEA STRAIN ATCC 19718 GENE NE1649)/CN
E12            1      ACYL CARRIER PROTEIN (ACPP) (TREPONEMA PALLIDUM GENE TP0808)
                      /CN

=> e acylbromide/cn
E1             1      ACYLATING ALDEHYDE DEHYDROGENASE (PSEUDOMONAS PUTIDA STRAIN
                      DOT-T1E GENE TODI)/CN
E2             1      ACYLATION-STIMULATING PROTEIN (ASP) (SWINE ADIPOSE TISSUE FR
                      AGMENT)/CN
E3             0 --> ACYLBROMIDE/CN
E4             1      ACYLCARNITINE HYDROLASE/CN
E5             1      ACYLCARNITINE HYDROLASE (MOUSE STRAIN C57BL/6 CLONE 7 GENE C
                      ES2A3)/CN
E6             1      ACYLCARNITINE TRANSFERASE/CN
E7             1      ACYLCARNITINE-CARNITINE-TRANSPORTING PROTEIN (ARABIDOPSIS TH
                      ALIANA STRAIN COLUMBIA CLONE MZA15)/CN
E8             1      ACYLCARNITINE-CARNITINE-TRANSPORTING PROTEIN (ASPERGILLUS NI
                      DULANS GENE ACUH)/CN
E9             1      ACYLCARNITINE-CARNITINE-TRANSPORTING PROTEIN (HUMAN MITOCHON
                      DRIA-ASSOCIATED)/CN
E10            1      ACYLCARNITINE-CARNITINE-TRANSPORTING PROTEIN (RATTUS NORVEGI
                      CUS)/CN
E11            1      ACYLCARNITINE-CARNITINE-TRANSPORTING PROTEINS/CN
E12            1      ACYLCARNITINE-CARNITINE-TRANSPORTING TRANSPORT PROTEIN CAC (
                      RAT CLONE PCR-4/PCR-3 PRECURSOR)/CN

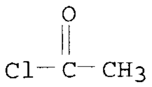
=> e acyl iodide/cn
E1             1      ACYL HYDROLASE/CN
E2             2      ACYL HYDROLASE (ARABIDOPSIS THALIANA STRAIN COLUMBIA GENE SA
                      G101)/CN
E3             0 -->  ACYL IODIDE/CN
E4             1      ACYL LIPID DESATURASE/CN
E5             1      ACYL NAPHTHYLAMIDASE/CN
E6             1      ACYL PHOSPHATASE/CN
E7             1      ACYL PHOSPHATE-HEXOSE PHOSPHOTRANSFERASE/CN
E8             1      ACYL PROTEIN SYNTHASE/ACYL-COA REDUCTASE RFBN (VIBRIO CHOLER
                      AE STRAIN N16961 GENE VC0251)/CN
E9             1      ACYL PROTEIN SYNTHASE/ACYL-COA REDUCTASE-LIKE PROTEIN (BIFID
                      OBACTERIUM LONGUM STRAIN NCC2705 GENE BL0514)/CN
E10            1      ACYL PROTEIN SYNTHETASE/CN
E11            1      ACYL PROTEIN THIOESTER HYDROLASE/CN
E12            1      ACYL SUGAR CARBOXYL ESTERASE/CN

=> e acetyl chloride/cn
E1             1      ACETYL CHAVICOL/CN
E2             1      ACETYL CHILIANOSIDE H/CN
E3             1 -->  ACETYL CHLORIDE/CN
E4             1      ACETYL CHLORIDE (O-NITROPHENYL)HYDRAZONE/CN
E5             1      ACETYL CHLORIDE 2-NITROPHENYLHYDRAZONE/CN
E6             1      ACETYL CHLORIDE 4-BROMO-2-NITROPHENYLHYDRAZONE/CN
E7             1      ACETYL CHLORIDE 4-BROMOPHENYLHYDRAZONE/CN
E8             1      ACETYL CHLORIDE CATION RADICAL/CN
E9             1      ACETYL CHLORIDE, ((((((4-CHLOROPHENYL)METHYL)AMINO)IMINOMET
                      HYL)AMINO)CARBONYL)AMINO)-, MONOHYDROCHLORIDE/CN
E10            1      ACETYL CHLORIDE, (((((4-CHLOROPHENYL)AMINO)IMINOMETHYL)AMIN
                      O)CARBONYL)AMINO)-, MONOHYDROCHLORIDE/CN
E11            1      ACETYL CHLORIDE, (((((CYCLOHEXYLMETHYL)AMINO)IMINOMETHYL)AM
                      INO)CARBONYL)AMINO)-, MONOHYDROCHLORIDE/CN
E12            1      ACETYL CHLORIDE, ((((ETHYLAMINO)IMINOMETHYL)AMINO)CARBONYL)
                      AMINO)-, MONOHYDROCHLORIDE/CN

=> s e3
L2             1 "ACETYL CHLORIDE"/CN

=> d l2

L2   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2004 ACS on STN
RN   75-36-5  REGISTRY
CN   Acetyl chloride (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   Acetic chloride
CN   Ethanoyl chloride
FS   3D CONCORD
MF   C2 H3 Cl O
CI   COM
LC   STN Files:   AGRICOLA, ANABSTR, AQUIRE, BEILSTEIN*, BIOBUSINESS, BIOSIS,
       BIOTECHNO, CA, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS,
       CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DETHERM*, DIPPR*,
       EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*,
       HSDB*, IFICDB, IFIPAT, IFIUDB, MEDLINE, MRCK*, MSDS-OHS, PDLCOM*, PIRA,
       PROMT, PS, RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, USPAT2,
       USPATFULL, VTB
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)
```



$$\mathrm{Cl{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}CH_3}$$

```
**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

            8436 REFERENCES IN FILE CA (1907 TO DATE)
             185 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
            8446 REFERENCES IN FILE CAPLUS (1907 TO DATE)
               4 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> s acetyl bromide
       1124784 ACETYL
            54 ACETYLS
       1124784 ACETYL
                 (ACETYL OR ACETYLS)
        157155 BROMIDE
            21 BROMIDES
        157155 BROMIDE
                 (BROMIDE OR BROMIDES)
L3         237 ACETYL BROMIDE
                 (ACETYL(W)BROMIDE)

=> e acetyl bromide/cn
E1             1      ACETYL BETULINALDEHYDE/CN
E2             1      ACETYL BREVICUSPIC ACID/CN
E3             1 -->  ACETYL BROMIDE/CN
E4             1      ACETYL BROMIDE COMPOUND WITH ALUMINUM BROMIDE (1:1)/CN
E5             1      ACETYL BROMIDE, ((1-ACETYL-3,11-DIHYDRO-5,12-DIHYDROXY-4,8,9
                      ,13-TETRAMETHOXY-2-METHYL-11-OXO-6H-CYCLOHEPTA(GHI)PERYLEN-6
                      -YLIDENE)AMINO)-/CN
E6             1      ACETYL BROMIDE, ((3-METHOXYBENZOYL)METHYLAMINO)OXO-/CN
E7             1      ACETYL BROMIDE, ((5-(((5-(((5-(((5-(((3-AMINO-3-IMINOPROPYL)
                      AMINO)CARBONYL)-1-METHYL-1H-PYRROL-3-YL)AMINO)CARBONYL)-1-ME
                      THYL-1H-PYRROL-3-YL)AMINO)CARBONYL)-1-METHYL-1H-PYRROL-3-YL)
                      AMINO)CARBONYL)-1-ME/CN
E8             1      ACETYL BROMIDE, ((5-ETHOXY-1H-BENZIMIDAZOL-2-YL)THIO)-/CN
E9             1      ACETYL BROMIDE, ((5-NITRO-1H-BENZIMIDAZOL-2-YL)THIO)-/CN
E10            1      ACETYL BROMIDE, (1H-BENZIMIDAZOL-2-YLTHIO)-/CN
E11            1      ACETYL BROMIDE, (2,4-DINITROPHENYL)HYDRAZONE/CN
E12            1      ACETYL BROMIDE, (2,5-DICHLOROPHENOXY)-/CN

=> s e3
L4             1 "ACETYL BROMIDE"/CN

=> s acetyl iodide/cn
L5             1 ACETYL IODIDE/CN

=> file caplus
COST IN U.S. DOLLARS                              SINCE FILE       TOTAL
                                                       ENTRY     SESSION
FULL ESTIMATED COST                                    36.98       37.19
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FILE 'CAPLUS' ENTERED AT 18:58:14 ON 17 APR 2004
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FILE COVERS 1907 - 17 Apr 2004  VOL 140 ISS 17
FILE LAST UPDATED: 16 Apr 2004  (20040416/ED)

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.


=>  s l2 or l4 or l5
          8451 L2
           734 L4
           114 L5
L6        8928 L2 OR L4 OR L5

=> s acyl halide
         95452 ACYL
           236 ACYLS
         95552 ACYL
                 (ACYL OR ACYLS)
        144112 HALIDE
        119477 HALIDES
        208744 HALIDE
                 (HALIDE OR HALIDES)
L7        2046 ACYL HALIDE
                 (ACYL(W)HALIDE)

=> s l6 or l7
L8       10654 L6 OR L7

=> s l8 and (acylation or acyla?)
         55066 ACYLATION
           798 ACYLATIONS
         55286 ACYLATION
                 (ACYLATION OR ACYLATIONS)
         87715 ACYLA?
L9        2717 L8 AND (ACYLATION OR ACYLA?)

=> s l9 and (perfluorinat? ion)
          4675 PERFLUORINAT?
       1043810 ION
        659105 IONS
       1388882 ION
                 (ION OR IONS)
           138 PERFLUORINAT? ION
                 (PERFLUORINAT?(W)ION)
L10          0 L9 AND (PERFLUORINAT? ION)

=> s l9 and perfluorinated
          4537 PERFLUORINATED
```

```
L11          3 L9 AND PERFLUORINATED

=> d l11 ibib ab 1-3

L11  ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2003:491160  CAPLUS
DOCUMENT NUMBER:          139:69391
TITLE:                    Process for the manufacture of trimethylhydroquinone
                          diacylates and (all-rac)-α-tocopherol
INVENTOR(S):              Bonrath, Werner; Schneider, Michael
PATENT ASSIGNEE(S):       Roche Vitamins Ag, Switz.
SOURCE:                   PCT Int. Appl., 13 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
     WO 2003051812      A1   20030626      WO 2002-EP13890  20021207
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA,
             UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,
             CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
             MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.:                      EP 2001-129794   A  20011214
OTHER SOURCE(S):          CASREACT 139:69391; MARPAT 139:69391
AB   The present invention discloses a process for the manufacture of a
     2,3,5-trimethylhydroquinone diacylate by reacting ketoisophorone with an
     acylating agent, such as an acid anhydride, an acyl
     halide or an enol ester, in the presence of certain bis(
     perfluorinated hydrocarbylsulfonyl)imides and metal salts thereof,
     such as [(R1SO2)2N]nR2 [R1 = perfluoroalkyl, pentafluorophenyl; R2 = metal
     cation; n = 0-5, corresponding to the valency of the proton (1) or the
     metal cation (1-5) signified by R2], and certain
     tris(perfluoroalkanesulfonyl or pentafluorobenzenesulfonyl)methanes and
     metal salts thereof, such as [(R3SO2)3C]nR2 (R3 = perfluoroalkyl,
     pentafluorophenyl).  The 2,3,5-trimethylhydroquinone diacylate can be
     converted into (all-rac)-α-tocopherol by transesterification to
     yield 2,3,5-trimethylhydroquinone and reaction of the latter with
     isophytol.  (all-rac)-α-Tocopherol itself is the most active member
     of the vitamin E group.
REFERENCE COUNT:          2     THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11  ANSWER 2 OF 3  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2002:71946  CAPLUS
DOCUMENT NUMBER:          136:120209
TITLE:                    Composition and compound based on salts of metals and
                          acids having a sulfonyl group borne by a
                          perhalogenated carbon and their use as Lewis acid
                          catalysts
INVENTOR(S):              Roques, Nicolas; Dubac, Jacques; Le Roux, Christophe;
                          Repichet, Sigrid; Bernard, Jean-Marie; Maestro,
                          Jean-Pierre; Vidal, Thierry; Peyronneau, Magali;
                          Picot, Alexandre; Mazieres, Stephane
PATENT ASSIGNEE(S):       Rhodia Chimie, Fr.
SOURCE:                   PCT Int. Appl., 47 pp.
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                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 French
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE          APPLICATION NO.   DATE
     ---------------   ----  --------      ---------------   --------
     WO 2002005954      A1   20020124      WO 2001-FR2289    20010713
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
             RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,
             UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     FR 2811592         A1   20020118      FR 2000-9213      20000713
     FR 2811592         B1   20020830
     FR 2818980         A1   20020705      FR 2000-17310     20001229
     FR 2818980         B1   20030418
     FR 2827195         A1   20030117      FR 2001-9213      20010711
     EP 1301275         A1   20030416      EP 2001-954096    20010713
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
     JP 2004503379      T2   20040205      JP 2002-511882    20010713
PRIORITY APPLN. INFO.:                  FR 2000-9213     A  20000713
                                        FR 2000-17310    A  20001229
                                        FR 2001-9213     A  20010711
                                        WO 2001-FR2289   W  20010713
OTHER SOURCE(S):          MARPAT 136:120209
AB   Title salts have elements of valence (μ) ≥3 and have, as
     coanions, ≥1 and ≤(μ-1) anions bearing a sulfonyl
     function borne by a perhalogenated atom, preferably perfluorinated
     , more preferably, a perfluoromethylene group.  The invention is
     applicable to catalysis involving electrophilic cations, with these salts
     to replace previously used triflate salts.  BiCl(OTf)2 (Tf = CF3SO) was
     manufactured by heating 9.11 g BiCl3 1.5 h at 110° with 10.5 g TfOH in
     PhMe.
REFERENCE COUNT:          4      THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
                                 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11  ANSWER 3 OF 3  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1991:515220  CAPLUS
DOCUMENT NUMBER:          115:115220
TITLE:                    An x-ray photoelectron spectroscopic investigation of
                          the selectivity of hydroxyl derivatization reactions
AUTHOR(S):                Chilkoti, Ashutosh; Ratner, Buddy D.
CORPORATE SOURCE:         Cent. Bioeng., Univ. Washington, Seattle, WA, 98195,
                          USA
SOURCE:                   Surface and Interface Analysis (1991), 17(8), 567-74
                          CODEN: SIANDQ; ISSN: 0142-2421
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
AB   The selectivity of trifluoroacetic acid (I), used for the vapor-phase
     derivatization of hydroxyl groups in multifunctional O-containing polymeric
     surfaces, was investigated by XPS studies on model epoxide systems.  The
     reactivity of I towards epoxides was discussed in terms of the context of
     the large amount of published literature implying high selectivity of this
     reaction toward hydroxyl groups.  AcCl and heptafluorobutyryl chloride
     (II), used to derivatize hydroxyl groups in the literature, were also
     examined, with regard to cross-reaction with epoxides.  Both AcCl and II
     reacted with epoxides, forming chloroacetates and perfluorinated
     chloroacetates, resp.  I reacted with double bonds, forming
     perfluorinated chloroacetates, while AcCl was unreactive toward
     them.  The reactivity of II toward epoxides and unsatn. compromised its
     use as a derivatization agent for hydroxyl groups.  However, the unique
     reaction products formed by exposure of hydroxyls and epoxides to AcCl
     vapor may allow hydroxyl species to be distinguished from epoxides in
     multifunctional C-O polymeric surfaces.


=> s acylation and perfluorinat?
         55066 ACYLATION
           798 ACYLATIONS
         55286 ACYLATION
                 (ACYLATION OR ACYLATIONS)
          4675 PERFLUORINAT?
L12         43 ACYLATION AND PERFLUORINAT?

=> s l12 and (sulfonic or carboxylic acid)
         68926 SULFONIC
            20 SULFONICS
         68940 SULFONIC
                 (SULFONIC OR SULFONICS)
        216033 CARBOXYLIC
            46 CARBOXYLICS
        216051 CARBOXYLIC
                 (CARBOXYLIC OR CARBOXYLICS)
       3805992 ACID
       1429158 ACIDS
       4271918 ACID
                 (ACID OR ACIDS)
        198816 CARBOXYLIC ACID
                 (CARBOXYLIC(W)ACID)
L13         17 L12 AND (SULFONIC OR CARBOXYLIC ACID)

=> d l13 ibib ab 1-17

L13  ANSWER 1 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2003:488648  CAPLUS
DOCUMENT NUMBER:          139:67881
TITLE:                    Process for the kinetic resolution of racemic alcohols
                          having one or more stereogenic centers using lipase
INVENTOR(S):              Theil, Fritz; Sonnenschein, Helmut
PATENT ASSIGNEE(S):       Asca GmbH, Angewandte Synthesechemie Adlershof,
                          Germany
SOURCE:                   Eur. Pat. Appl., 7 pp.
                          CODEN: EPXXDW
DOCUMENT TYPE:            Patent
LANGUAGE:                 German
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
     EP 1321528         A1   20030625      EP 2002-28399    20021218
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK
     DE 10164269        A1   20030703      DE 2001-10164269 20011219
     US 2003148481      A1   20030807      US 2002-322756   20021219
PRIORITY APPLN. INFO.:                  DE 2001-10164269 A  20011219
OTHER SOURCE(S):          MARPAT 139:67881
AB   A process is provided for the lipase catalyzed kinetic resolution of alcs.
     with one or more chiral centers.  Specifically, a racemic fluorinated
     carboxylic acid ester of a chiral alc. is hydrolyzed by
     lipase in an organic solvent.  The reaction mixture is then extracted with a
mixture
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of organic and **perfluorinated** solvents. In this two phase system, the unreacted fluorinated **carboxylic acid** ester partitions into the fluorinated solvent, while the chiral alc. which is released from the hydrolysis reaction partitions into the organic solvent. Thus, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-heptadecafluoroundecanoic acid, indan-1-yl ester was mixed with n-butanol, acetonitrile and an immobilized lipase until ~ 50% of the ester was hydrolyzed. The lipase was filtered off, the filtrate containing the reaction substrates and products was dried under vacuum, and then the residue was dissolved in methanol. This methanol solution was then extracted with n-perfluorohexane. The organic phase contained (R)-1-indanol in an enantiomeric excess of > 95%, while the fluorinated solvent phase contained the unreacted (S)-4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-heptadecafluoroundecanoic acid, indan-1-yl ester also with an enantiomeric excess of > 95%.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2003:173493 CAPLUS
DOCUMENT NUMBER: 138:223974
TITLE: Pressure-mediated solid catalyzed heterogeneous reactions, especially petroleum alkylations, carried out under near-critical or supercritical conditions
INVENTOR(S): Subramaniam, Bala; Lyon, Christopher James
PATENT ASSIGNEE(S): The University of Kansas, USA
SOURCE: PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

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    PATENT NO.         KIND  DATE           APPLICATION NO.   DATE
    ---------------    ----  --------       ---------------   --------
    WO 2003018182       A2   20030306       WO 2002-US27340   20020826
    WO 2003018182       A3   20030807
        W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
            CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
            GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
            LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
            PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,
            UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD,
            RU, TJ, TM
        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,
            CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
            PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
            NE, SN, TD, TG
    US 2003073876       A1   20030417       US 2001-940015    20010827
PRIORITY APPLN. INFO.:                   US 2001-940015    A  20010827
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AB Heterogeneous chemical reactions are conducted in the presence of a macroporous solid catalyst under near-critical or supercrit. conditions with pressure control to promote reaction, separation of desired reaction products, and to regenerate deactivated catalysts (e.g., by coking reactions). Representative reactions conducted under these conditions include alkylation, **acylation**, isomerization, aromatic hydrocarbon disproportionation, alc. synthesis, and Fischer-Tropsch reactions. Especially, the system can be used for C2-10-alkene-C4-10-isoparaffin alkylation reactions over a **perfluorinated** polymer with **sulfonic** acid groups (e.g., Nafion-type catalysts, with surface area 50-400 m2/g and pore size of 70-150 Å) in the presence of a co-solvent or diluent, such as CO2, methane, ethane, or H2. Alkylation is carried out at 0.9-1.3 Tc and 0.9-2.5 Pc of the reactant mixture (Tc and Pc are the critical temperature and

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     pressure, resp.), in which reaction is interrupted before significant
     catalyst deactivation, followed by increasing the reactor pressure and/or
     reducing the reactor temperature, to remove accumulated coke.

L13  ANSWER 3 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2002:71946  CAPLUS
DOCUMENT NUMBER:          136:120209
TITLE:                    Composition and compound based on salts of metals and
                          acids having a sulfonyl group borne by a
                          perhalogenated carbon and their use as Lewis acid
                          catalysts
INVENTOR(S):              Roques, Nicolas; Dubac, Jacques; Le Roux, Christophe;
                          Repichet, Sigrid; Bernard, Jean-Marie; Maestro,
                          Jean-Pierre; Vidal, Thierry; Peyronneau, Magali;
                          Picot, Alexandre; Mazieres, Stephane
PATENT ASSIGNEE(S):       Rhodia Chimie, Fr.
SOURCE:                   PCT Int. Appl., 47 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 French
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.       KIND  DATE          APPLICATION NO.  DATE
     ---------------  ----  --------      ---------------  --------
     WO 2002005954     A1   20020124      WO 2001-FR2289   20010713
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT,
             RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US,
             UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     FR 2811592        A1   20020118      FR 2000-9213     20000713
     FR 2811592        B1   20020830
     FR 2818980        A1   20020705      FR 2000-17310    20001229
     FR 2818980        B1   20030418
     FR 2827195        A1   20030117      FR 2001-9213     20010711
     EP 1301275        A1   20030416      EP 2001-954096   20010713
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
     JP 2004503379     T2   20040205      JP 2002-511882   20010713
PRIORITY APPLN. INFO.:                 FR 2000-9213     A  20000713
                                       FR 2000-17310    A  20001229
                                       FR 2001-9213     A  20010711
                                       WO 2001-FR2289   W  20010713
OTHER SOURCE(S):          MARPAT 136:120209
AB   Title salts have elements of valence (μ) ≥3 and have, as
     coanions, ≥1 and ≤(μ-1) anions bearing a sulfonyl
     function borne by a perhalogenated atom, preferably perfluorinated
     , more preferably, a perfluoromethylene group.  The invention is
     applicable to catalysis involving electrophilic cations, with these salts
     to replace previously used triflate salts.  BiCl(OTf)2 (Tf = CF3SO) was
     manufactured by heating 9.11 g BiCl3 1.5 h at 110° with 10.5 g TfOH in
     PhMe.
REFERENCE COUNT:          4     THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13  ANSWER 4 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2001:453276  CAPLUS
DOCUMENT NUMBER:          135:45293
TITLE:                    Method for kinetic resolution of racemates of alcohols
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                              or carboxylic acid esters
INVENTOR(S):                  Theil, Fritz; Sonnenschein, Helmut
PATENT ASSIGNEE(S):           Witega Angewandte Werkstoff-Forschung G.G.m.b.H.,
                              Germany; Institut Fuer Nichtklassische Chemie E. V. An
                              Der Universitaet Leipzig
SOURCE:                       PCT Int. Appl., 16 pp.
                              CODEN: PIXXD2
DOCUMENT TYPE:                Patent
LANGUAGE:                     German
FAMILY ACC. NUM. COUNT:       3
PATENT INFORMATION:

     PATENT NO.          KIND  DATE            APPLICATION NO.   DATE
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     WO 2001044492        A2   20010621        WO 2000-DE4536    20001218
     WO 2001044492        A3   20020131
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CR, CU, CZ, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
             ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
             LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,
             SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,
             ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     DE 19963314          A1   20010621        DE 1999-19963314 19991219
     DE 19963315          A1   20010621        DE 1999-19963315 19991219
     DE 10006824          A1   20010809        DE 2000-10006824 20000208
     EP 1242613           A2   20020925        EP 2000-990552    20001218
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
     US 2003003552        A1   20030102        US 2002-168744    20020618
PRIORITY APPLN. INFO.:                      DE 1999-19963314 A  19991219
                                            DE 1999-19963315 A  19991219
                                            DE 2000-10006824 A  20000208
                                            WO 2000-DE4536   W  20001218
OTHER SOURCE(S):              CASREACT 135:45293; MARPAT 135:45293
AB   A method is provided for the enzymic kinetic resolution of racemic alcs. or
     racemic carboxylic acid esters catalyzed by a lipase
     perfluorotransacylation.  The unreacted enantiomer is then separated from the
     perfluorinated specie with a two phase extraction involving a
     fluorinated and an organic solvent.  Thus, a mixture of racemic
     1-phenylethanol, 4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-
     heptadecafluoroundecanoic acid, 2,2,2-trifluoroethyl ester, and lipase in
     acetonitrile were reacted at room temperature  The enzyme was removed by
     filtration and the filtrate was vacuum filtered to dryness.  The residue
     was dissolved in methanol and extracted with n-perfluorohexane.  The methanol
     phase contained (S)-1-phenylethanol with an enantiomeric resolution of 95%,
     while the fluorinated phase contained (R)-4,4,5,5,6,6,7,7,8,8,9,9,10,10,11
     ,11,11-heptadecafluoroundecanoic acid, 1-phenylethyl ester also with an
     enantiomeric resolution of 95%.  The reaction may be conducted in a
     perfluorinated or nonfluorinated solvent, or a mixture of the two
     and the reaction products are separated by extraction with a nonfluorinated or
     perfluorinated solvent resp. such that the unreacted enantiomer
     and the perfluorinated ester formed partition into the different
     solvent phases.

L13  ANSWER 5 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:             2001:449839  CAPLUS
DOCUMENT NUMBER:              135:45290
TITLE:                        Procedure for the kinetic resolution of
                              carboxylic acid esters
INVENTOR(S):                  Theil, Fritz; Sonnenschein, Helmut
PATENT ASSIGNEE(S):           Witega Angewandte Werkstoff-Forschung Gemeinnuetzige
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G.m.b.H. Adlershof, Germany; Institut fuer Nichtklassische Chemie e.V. an der Universitaet Leipzig
SOURCE: Ger. Offen., 4 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

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     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
     DE 19963315        A1   20010621      DE 1999-19963315 19991219
     WO 2001044492      A2   20010621      WO 2000-DE4536   20001218
     WO 2001044492      A3   20020131
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CR, CU, CZ, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
             ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
             LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,
             SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,
             ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     EP 1242613         A2   20020925       EP 2000-990552   20001218
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
     US 2003003552      A1   20030102       US 2002-168744   20020618
PRIORITY APPLN. INFO.:                   DE 1999-19963314 A  19991219
                                         DE 1999-19963315 A  19991219
                                         DE 2000-10006824 A  20000208
                                         WO 2000-DE4536   W  20001218
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OTHER SOURCE(S): MARPAT 135:45290

AB A method is provided for the enzymic kinetic resolution of a racemic **carboxylic acid** ester with the formula: XCHR1CO2R2, where R1 and R2 may be alkyl vinyl, or aryl groups and X is an alkyl alkenyl, alkoxy, aryl, aryloxy, or halogen group. The reaction is catalyzed by a lipase perfluorotransacylation. The unreacted enantiomer is then separated from the **perfluorinated** specie with a two phase extraction involving a fluorinated and an organic solvent. Thus, a **perfluorinated carboxylic acid** with the formula: CF3(CF2)m(CH2)nOH, where m is an integer from 3 through 10, n is 0 or an integer from 1 through 4, is reacted with a racemic carbonic acid ester as described above in the presence of lipase. The reaction may be conducted in a **perfluorinated** or nonfluorinated solvent, and the reaction products are separated by extraction with a nonfluorinated or **perfluorinated** solvent resp. such that the unreacted enantiomer and the **perfluorinated** ester formed partition into the different solvent phases.

L13 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:449838 CAPLUS
DOCUMENT NUMBER: 135:45289
TITLE: Procedure for the kinetic resolution of alcohols
INVENTOR(S): Theil, Fritz; Sonnenschein, Helmut
PATENT ASSIGNEE(S): Witega Angewandte Werkstoff-Forschung Gemeinnuetzige G.m.b.H. Adlershof, Germany; Institut fuer Nichtklassische Chemie e.V. an der Universitaet Leipzig
SOURCE: Ger. Offen., 4 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 3

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PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
     DE 19963314        A1   20010621       DE 1999-19963314 19991219
     WO 2001044492      A2   20010621       WO 2000-DE4536   20001218
     WO 2001044492      A3   20020131
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CR, CU, CZ, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
             ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
             LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,
             SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,
             ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     EP 1242613         A2   20020925        EP 2000-990552   20001218
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
     US 2003003552      A1   20030102        US 2002-168744   20020618
PRIORITY APPLN. INFO.:                    DE 1999-19963314 A  19991219
                                          DE 1999-19963315 A  19991219
                                          DE 2000-10006824 A  20000208
                                          WO 2000-DE4536   W  20001218
OTHER SOURCE(S):         MARPAT 135:45289
AB   A method is provided for the enzymic kinetic resolution of a racemic alc.by a
     lipase catalyzed perfluoroacylation.  The unreacted enantiomer is then
     separated from the perfluorinated specie with a two phase extraction
     involving a fluorinated and an organic solvent.  Thus, a
     perfluorinated carboxylic acid ester with the
     formula: R-(CH2)n-CO2R1, where R is either a CF3-(CF2)m group where m is
     an integer from 3 through 10, n is an integer from 1 through 4, or an
     aromatic group C6F4X, where X is a fluorine or a perfluorinated
     alkyl group, and R1 is an alkyl, vinyl, aryl, 2-cyanoethyl,
     2,2,2-trifluoroethyl, or 2,2,2-trichloroethyl group, is reacted with a
     racemic alc. in the presence of lipase.  The reaction may be conducted in
     a perfluorinated or nonfluorinated solvent, and the reaction
     products are separated by extraction with a nonfluorinated or
     perfluorinated solvent resp. such that the unreacted enantiomer
     and the perfluorinated ester formed partition into the different
     solvent phases.

L13  ANSWER 7 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2000:535050  CAPLUS
DOCUMENT NUMBER:          133:166058
TITLE:                    Porous highly fluorinated acidic polymer catalyst and
                          process for its preparation
INVENTOR(S):              Lloyd, Ralph Birchard; Howard, Edward G.
PATENT ASSIGNEE(S):       E. I. Du Pont de Nemours & Co., USA
SOURCE:                   PCT Int. Appl., 22 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
     WO 2000044495      A1   20000803       WO 2000-US2102   20000128
         W:  CN, JP, RU
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE
     US 6200924         B1   20010313       US 2000-491394   20000126
     EP 1152830         A1   20011114       EP 2000-914453   20000128
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         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI
     JP 2002535137      T2   20021022       JP 2000-595785    20000128
PRIORITY APPLN. INFO.:                    US 1999-117699P  P  19990129
                                          WO 2000-US2102   W  20000128
AB   This invention relates to a solid acid catalyst comprising porous highly
     fluorinated acidic polymer and process for manufacturing it.  The catalyst
     comprises at least 90% highly fluorinated acidic polymer and has a surface
     area of .apprx.0.01 m2/g to .apprx.5 m2/g.  The catalyst is prepared by
     exposing the polymer to a pressurized fluid such as SO2 or CO2, heating
     the polymer to above the softening point, reducing the pressure quickly
     thus expanding the polymer into a porous structure, and cooling the
     polymer.  Examples of the highly fluorinated acidic polymer are
     perfluorinated sulfonic acid resin
     perfluorinated and sulfonyl fluoride polymer.
REFERENCE COUNT:          4      THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS
                                 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13  ANSWER 8 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1998:689189  CAPLUS
DOCUMENT NUMBER:          129:318232
TITLE:                    Porous microcomposite of perfluorinated
                          ion-exchange polymer and dispersed metal oxide and/or
                          silica derived via a sol-gel process
INVENTOR(S):              Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S):       E. I. Du Pont de Nemours & Co., USA
SOURCE:                   U.S., 24 pp., Cont.-in-part of U.S. Ser. No. 362,063,
                          abandoned.
                          CODEN: USXXAM
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   4
PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
     US 5824622         A    19981020       US 1995-574751    19951219
     ES 2139187         T3   20000201       ES 1995-907964    19950110
     WO 9619288         A1   19960627       WO 1995-US16566   19951220
         W:  CN, JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     EP 799091          A1   19971008       EP 1995-944346    19951220
     EP 799091          B1   19980902
         R:  DE, FR, GB, IT, NL
     CN 1170373         A    19980114       CN 1995-196956    19951220
     CN 1082940         B    20020417
     US 5916837         A    19990629       US 1996-683998    19960719
     US 5948946         A    19990907       US 1998-121106    19980723
     US 6034290         A    20000307       US 1999-277094    19990326
     US 6160190         A    20001212       US 1999-324931    19990603
     US 6515190         B1   20030204       US 2000-670530    20000927
     US 2003176729      A1   20030918       US 2002-322786    20021218
     US 6680406         B2   20040120
     US 2004068146      A1   20040408       US 2003-680838    20031007
     US 2004072671      A1   20040415       US 2003-680334    20031007
     US 2004072672      A1   20040415       US 2003-680337    20031007
     US 2004072673      A1   20040415       US 2003-680816    20031007
PRIORITY APPLN. INFO.:                    US 1994-180250   B2 19940112
                                          US 1994-362063   B2 19941222
                                          WO 1995-US12     A  19950110
                                          US 1995-574751   A  19951219
                                          WO 1995-US16566  W  19951220
                                          US 1996-683998   A3 19960719
                                          US 1998-121106   A3 19980723
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                                         US 1999-324931   A3 19990603
                                         US 2000-670530   A3 20000927
                                         US 2002-322786   A3 20021218
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AB Porous microcomposites are described which comprise a **perfluorinated** ion-exchange polymer (PFIEP) containing pendant **sulfonic** acid and/or **carboxylic acid** groups entrapped in a highly dispersed network of metal oxide and/or silica. The microcomposites are prepared from PFIEP (especially NAFION NR 005) and ≥1 precursors selected from a metal oxide precursor (e.g., aluminum tri(sec-butoxide)) and/or a silica precursor (e.g., tetramethoxysilane) using an in situ process. The microcomposites have a first set of pores having pore size diameter 0.5-75 nm and may further comprise a second set of pores having diameter 75-1000 nm. These microcomposites possess high surface area and exhibit high catalytic activity for a variety of reactions including nitration, esterification, dimerization, alkylation, polymerization, **acylation** and isomerization.

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:527339 CAPLUS
DOCUMENT NUMBER: 125:171500
TITLE: Sol-gel derived porous microcomposites of **perfluorinated** ion-exchange polymer and metal oxide as catalyst for organic reactions and their preparation
INVENTOR(S): Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S): E. I. Du Pont de Nemours & Co., USA
SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

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     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
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     WO 9619288         A1   19960627       WO 1995-US16566  19951220
         W:  CN, JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     US 5824622         A    19981020       US 1995-574751   19951219
     EP 799091          A1   19971008       EP 1995-944346   19951220
     EP 799091          B1   19980902
         R:  DE, FR, GB, IT, NL
     US 6034290         A    20000307       US 1999-277094   19990326
PRIORITY APPLN. INFO.:                   US 1994-362063   A  19941222
                                         US 1995-574751   A  19951219
                                         US 1994-180250   B2 19940112
                                         WO 1995-US12     A  19950110
                                         WO 1995-US16566  W  19951220
                                         US 1996-683998   A3 19960719
```

AB Porous microcomposites, having high surface area, pendant **sulfonic** and/or **carboxylic acid** groups entrapped within and highly dispersed throughout, and pore size 0.5-1000 nm, are prepared from **perfluorinated** ion-exchange polymer and metal oxides such as silica using the sol-gel process. The microcomposites are useful as catalysts for olefin isomerization, hydrocarbon alkylation, nitration or sulfonation of organic compds., etc. Thus, a 5% solution of Nafion NR 005 [.apprx.6.3:1 tetrafluoroethylene-perfluoro(3,6-dioxa-4-methyl-7-octenesulfonyl fluoride) copolymer] and a solution of tetramethoxysilane were stirred together and formed a gel in .apprx.10 s. The gel was processed and acidified giving a fine particle, light-yellow glasslike material (.apprx.13:87 Nafion-silica) having a BET surface area of 123 m2/g and average pore diameter 22 nm, which (2.5 g) was used to catalyze the isomerization of

1-butene at 50°, WHSV 0.4/h, and 2:1 He-1-butene flow, giving trans-2-butene 66.3, cis-2-butene 26.8, and 1-butene 6.9%.

L13 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:909497 CAPLUS
DOCUMENT NUMBER: 123:290381
TITLE: Sol-gel derived porous microcomposite of **perfluorinated** ion-exchange polymers and metal oxides as process catalysts
INVENTOR(S): Harmer, Mark Andrew
PATENT ASSIGNEE(S): du Pont de Nemours, E. I., and Co., USA
SOURCE: PCT Int. Appl., 64 PP.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

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     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
     WO 9519222         A1   19950720      WO 1995-US12     19950110
         W:  JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     EP 739239          A1   19961030      EP 1995-907964   19950110
     EP 739239          B1   19990915
         R:  BE, CH, DE, ES, FR, GB, IT, LI, NL
     JP 09508057        T2   19970819      JP 1995-519031   19950110
     ES 2139187         T3   20000201      ES 1995-907964   19950110
     US 6034290         A    20000307      US 1999-277094   19990326
     US 2003176729      A1   20030918      US 2002-322786   20021218
     US 6680406         B2   20040120
     US 2004068146      A1   20040408      US 2003-680838   20031007
     US 2004072671      A1   20040415      US 2003-680334   20031007
     US 2004072672      A1   20040415      US 2003-680337   20031007
     US 2004072673      A1   20040415      US 2003-680816   20031007
PRIORITY APPLN. INFO.:                  US 1994-180250    A  19940112
                                        US 1994-362063    A  19941222
                                        WO 1995-US12      W  19950110
                                        US 1995-574751    A2 19951219
                                        WO 1995-US16566   A  19951220
                                        US 1996-683998    A3 19960719
                                        US 1998-121106    A3 19980723
                                        US 1999-324931    A3 19990603
                                        US 2000-670530    A3 20000927
                                        US 2002-322786    A3 20021218
```

AB Porous microcomposites are prepared from (NAFION) **perfluorinated** ion-exchange polymers with pendant **sulfonic** and **carboxylic acid** groups and metal oxides (silica, alumina, titania, etc.) using the sol-gel process. Such microcomposites possess high surface area and exhibit extremely high catalytic activity, e.g., for nitration of aroms., esterification of acids, styrene dimerization, alkylation or **acylation** of aroms.

L13 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:216744 CAPLUS
DOCUMENT NUMBER: 120:216744
TITLE: The perfluoroacylation of cyclopropyl-containing alkenes
AUTHOR(S): Nenajdenko, Valentine G.; Leshcheva, Irina F.; Balenkova, Elizabeth S.
CORPORATE SOURCE: Dep. Chem., Moscow State Univ., Moscow, 119899, Russia
SOURCE: Tetrahedron (1994), 50(3), 775-82
CODEN: TETRAB; ISSN: 0040-4020
DOCUMENT TYPE: Journal

LANGUAGE: English
OTHER SOURCE(S): CASREACT 120:216744

AB The reaction of direct electrophilic perfluoroacylation of cyclopropyl containing alkenes by the novel reagent, BF3-Me2S-**perfluorinated carboxylic acid** anhydride, is given. The stereochem. and the dependence of the reaction course on the substrate are discussed.

L13 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1993:427479 CAPLUS
DOCUMENT NUMBER: 119:27479
TITLE: New methodology for fluorocarbon synthesis
AUTHOR(S): Burton, D. J.
CORPORATE SOURCE: Dep. Chem., Univ. Iowa, Iowa City, IA, USA
SOURCE: Report (1991), AFOSR-TR-92-0162; Order No. AD-A247163, 41 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1992, 92(12), Abstr. No. 231,479
DOCUMENT TYPE: Report
LANGUAGE: English

AB Novel, general methods for the preparation of thermally stable **perfluorinated** organometallic reagents were developed. F-vinyl iodides were prepared as precursors to F-vinyl organometallics. A variety of polyfluorinated cadmium, zinc, and copper reagents were developed as synthetic reagents for the introduction of polyfluorinated alkyl, aryl, and allyl groups. SET chemical was developed for the regiospecific addition of iodofluoroacetates and iodofluoromethylphosphonates to functionalized alkenes, and to accomplish a useful preparation of alkylsulfonyldifluoroacetates and acetamides. Alkylation and **acylation** reactions of fluorocarboxy phosphorus ylides were developed as a useful entry to precursor which could be easily hydrolyzed to fluoro ester and fluoro keto esters.

L13 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1991:408202 CAPLUS
DOCUMENT NUMBER: 115:8202
TITLE: Organic reactions catalyzed by solid superacids. 5. **Perfluorinated sulfonic** acid resin (Nafion-H) catalyzed intramolecular Friedel-Crafts **acylation**
AUTHOR(S): Yamato, Takehiko; Hideshima, Chieko; Prakash, G. K. Surya; Olah, George A.
CORPORATE SOURCE: Fac. Sci. Eng., Saga Univ., Saga, 840, Japan
SOURCE: Journal of Organic Chemistry (1991), 56(12), 3955-7
CODEN: JOCEAH; ISSN: 0022-3263
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 115:8202

AB Nafion-H, a **perfluorinated sulfonic** acid resin, catalyzed the intramol. Friedel-Crafts **acylation** of diarylalkane-2-**carboxylic acids** and arylalkanoic acids in refluxing p-xylene to provide cyclic ketones. E.g., acid I gave 50% cyclic ketone II. The reactions were clean, and the water that was formed as a byproduct did not deactivate the catalyst. It was also found that the intramol. **acylation** of the corresponding acid chlorides occurred under much milder reaction conditions. The mechanism of the reaction is discussed.

L13 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1991:408056 CAPLUS
DOCUMENT NUMBER: 115:8056
TITLE: Electrophilic **acylation** of fluoro olefins with **perfluorinated** α,β-unsaturated **carboxylic acid** fluorides

AUTHOR(S): Chepik, S. D.; Belen'kii, G. G.; Cherstkov, V. F.; Sterlin, S. R.; German, L. S.
CORPORATE SOURCE: Inst. Elementoorg. Soedin. im. Nesmeyanova, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1991), (2), 513-16
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian
OTHER SOURCE(S): CASREACT 115:8056

AB RCF:CFCOF [R = (CF3)2CF, C2F5] added to R1CF:CFR2 (R1 = R2 = F, Cl; R1 = CF3, R2 = F) in the presence of SbF5 to give RCF:CFCOCFR1CF2R2 in 61-94% yield and 1:6-12 cis-trans ratio. (CF3)2C:CO and C2F4 gave 1:1 CF2:C(CF3)COC2F5-C2F5CF:C(CF3)COF in 58% combined yield under these conditions.

L13 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1991:42035 CAPLUS
DOCUMENT NUMBER: 114:42035
TITLE: **Acylation** of fluorocarbethoxy-substituted ylides: a simple and general route to α-fluoro β-keto esters
AUTHOR(S): Thenappan, Alagappan; Burton, Donald J.
CORPORATE SOURCE: Dep. Chem., Univ. Iowa, Iowa City, IA, 52242, USA
SOURCE: Journal of Organic Chemistry (1991), 56(1), 273-7
CODEN: JOCEAH; ISSN: 0022-3263
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 114:42035

AB Bu3P:CFCO2Et reacts with primary, secondary, tertiary, cyclic, aromatic, and ester-substituted acid chlorides and anhydrides to form the corresponding C-acylated phosphonium salts, which are hydrolyzed under mild basic conditions to give 38-70% RCOCFHCO2Et. **Acylation** with ClCOZEt (Z = O, S) gives EtZCOCFHCO2Et. Extension of this reaction sequence to **perfluorinated** and partially fluorinated acid chlorides did not proceed cleanly to give the expected phosphonium salts. However, the anion derived from (EtO)2P(O)CFHCO2Et reacts with RFCOCl to form the corresponding C-acylated phosphonates, hydrolysis of which gives 57-77% RFCOCFHCO2Et.

L13 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1985:555690 CAPLUS
DOCUMENT NUMBER: 103:155690
TITLE: Simultaneous esterification and **acylation** of pesticides for analysis by gas chromatography. 1. Derivatization of glyphosate and (aminomethyl)phosphonic acid with fluorinated alcohols-**perfluorinated** anhydrides
AUTHOR(S): Deyrup, Cynthia L.; Chang, Shou Mei; Weintraub, Randy A.; Moye, H. Anson
CORPORATE SOURCE: Food Sci. Hum. Nutr. Dep., Univ. Florida, Gainesville, FL, 32611, USA
SOURCE: Journal of Agricultural and Food Chemistry (1985), 33(5), 944-7
CODEN: JAFCAU; ISSN: 0021-8561
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Glyphosate [1071-83-6] and its major metabolite, (aminomethyl)phosphonic acid [1066-51-9] were fully functionalized for anal. by gas chromatog. and mass spectrometry by reaction with mixts. of fluorinated alcs. and **perfluorinated** anhydrides. All phosphonic and **carboxylic acid** groups were esterified and all amino groups were acylated; derivatization was effected at 100° for 1 h. Average recoveries from potable water samples were 95, 90, and 104%, resp., for glyphosate at 10,

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     50, and 100 ppb; corresponding (aminomethyl)phosphonic acid recoveries
     averaged 106, 99, and 114% at 10, 50, and 100 ppb levels.

L13  ANSWER 17 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1980:58180  CAPLUS
DOCUMENT NUMBER:          92:58180
TITLE:                    Some new reactions of perfluorinated
                          sulfonic acids
AUTHOR(S):                Krespan, Carl G.
CORPORATE SOURCE:         Cent. Res. Dev. Dep., E. I. du Pont de Nemours and
                          Co., Wilmington, DE, 19898, USA
SOURCE:                   Journal of Organic Chemistry (1979), 44(26), 4924-9
                          CODEN: JOCEAH; ISSN: 0022-3263
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
OTHER SOURCE(S):          CASREACT 92:58180
AB   F3CCOCF2SO3H (I), prepared by treating F3CC(OEt):CF2 with SO3, is a very
     strong acid which adds to F2C:CH2 at <0° and is esterified in good
     yield by treating with trifluorovinyl ethers.  Self-catalyzed addition to the
     CO group in I, e.g. with benzene, gave e.g. PhC(CF3)(OH)CF2SO3H, isolated
     as the pyridinium salt.  Radical-catalyzed polymerization of I with F2C:CF2 or
     F2C:CH2 gave polymers containing ≤40% I.  I-F2C:CF2 polymer and Nafion
     beads catalyzed Friedel-Crafts alkylations and acylations.


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L1            0 S ACYL HALIDE
                E ACYL BROMIDE/CN
                E ACYLBROMIDE/CN
                E ACYL IODIDE/CN
                E ACETYL CHLORIDE/CN
L2            1 S E3
L3          237 S ACETYL BROMIDE
                E ACETYL BROMIDE/CN
L4            1 S E3
L5            1 S ACETYL IODIDE/CN

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L6         8928 S L2 OR L4 OR L5
L7         2046 S ACYL HALIDE
L8        10654 S L6 OR L7
L9         2717 S L8 AND (ACYLATION OR ACYLA?)
L10           0 S L9 AND (PERFLUORINAT? ION)
L11           3 S L9 AND PERFLUORINATED
L12          43 S ACYLATION AND PERFLUORINAT?
L13          17 S L12 AND (SULFONIC OR CARBOXYLIC ACID)

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        11866 PENDANT
          793 PENDANTS
        12382 PENDANT
                (PENDANT OR PENDANTS)
L14           3 L13 AND PENDANT

=> d l14 ibib ab 1-3

L14  ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         1998:689189  CAPLUS
DOCUMENT NUMBER:          129:318232
TITLE:                    Porous microcomposite of perfluorinated
```

ion-exchange polymer and dispersed metal oxide and/or silica derived via a sol-gel process

INVENTOR(S): Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S): E. I. Du Pont de Nemours & Co., USA
SOURCE: U.S., 24 pp., Cont.-in-part of U.S. Ser. No. 362,063, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5824622	A	19981020	US 1995-574751	19951219
ES 2139187	T3	20000201	ES 1995-907964	19950110
WO 9619288	A1	19960627	WO 1995-US16566	19951220
W: CN, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 799091	A1	19971008	EP 1995-944346	19951220
EP 799091	B1	19980902		
R: DE, FR, GB, IT, NL				
CN 1170373	A	19980114	CN 1995-196956	19951220
CN 1082940	B	20020417		
US 5916837	A	19990629	US 1996-683998	19960719
US 5948946	A	19990907	US 1998-121106	19980723
US 6034290	A	20000307	US 1999-277094	19990326
US 6160190	A	20001212	US 1999-324931	19990603
US 6515190	B1	20030204	US 2000-670530	20000927
US 2003176729	A1	20030918	US 2002-322786	20021218
US 6680406	B2	20040120		
US 2004068146	A1	20040408	US 2003-680838	20031007
US 2004072671	A1	20040415	US 2003-680334	20031007
US 2004072672	A1	20040415	US 2003-680337	20031007
US 2004072673	A1	20040415	US 2003-680816	20031007

PRIORITY APPLN. INFO.:

US 1994-180250	B2	19940112
US 1994-362063	B2	19941222
WO 1995-US12	A	19950110
US 1995-574751	A	19951219
WO 1995-US16566	W	19951220
US 1996-683998	A3	19960719
US 1998-121106	A3	19980723
US 1999-324931	A3	19990603
US 2000-670530	A3	20000927
US 2002-322786	A3	20021218

AB Porous microcomposites are described which comprise a **perfluorinated** ion-exchange polymer (PFIEP) containing **pendant sulfonic** acid and/or **carboxylic acid** groups entrapped in a highly dispersed network of metal oxide and/or silica. The microcomposites are prepared from PFIEP (especially NAFION NR 005) and ≥1 precursors selected from a metal oxide precursor (e.g., aluminum tri(sec-butoxide)) and/or a silica precursor (e.g., tetramethoxysilane) using an in situ process. The microcomposites have a first set of pores having pore size diameter 0.5-75 nm and may further comprise a second set of pores having diameter 75-1000 nm. These microcomposites possess high surface area and exhibit high catalytic activity for a variety of reactions including nitration, esterification, dimerization, alkylation, polymerization, **acylation** and isomerization.

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L14 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:527339 CAPLUS
DOCUMENT NUMBER: 125:171500

TITLE: Sol-gel derived porous microcomposites of **perfluorinated** ion-exchange polymer and metal oxide as catalyst for organic reactions and their preparation
INVENTOR(S): Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S): E. I. Du Pont de Nemours & Co., USA
SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

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     PATENT NO.        KIND  DATE           APPLICATION NO.   DATE
     ---------------   ----  --------       ---------------   --------
     WO 9619288         A1   19960627       WO 1995-US16566   19951220
         W:  CN, JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     US 5824622         A    19981020       US 1995-574751    19951219
     EP 799091          A1   19971008       EP 1995-944346    19951220
     EP 799091          B1   19980902
         R:  DE, FR, GB, IT, NL
     US 6034290         A    20000307       US 1999-277094    19990326
PRIORITY APPLN. INFO.:                   US 1994-362063    A  19941222
                                         US 1995-574751    A  19951219
                                         US 1994-180250    B2 19940112
                                         WO 1995-US12      A  19950110
                                         WO 1995-US16566   W  19951220
                                         US 1996-683998    A3 19960719
```

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L14 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:909497 CAPLUS
DOCUMENT NUMBER: 123:290381
TITLE: Sol-gel derived porous microcomposite of **perfluorinated** ion-exchange polymers and metal oxides as process catalysts
INVENTOR(S): Harmer, Mark Andrew
PATENT ASSIGNEE(S): du Pont de Nemours, E. I., and Co., USA
SOURCE: PCT Int. Appl., 64 PP.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

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     PATENT NO.        KIND  DATE           APPLICATION NO.   DATE
     ---------------   ----  --------       ---------------   --------
     WO 9519222          A1   19950720       WO 1995-US12      19950110
         W:  JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     EP 739239           A1   19961030       EP 1995-907964    19950110
     EP 739239           B1   19990915
         R:  BE, CH, DE, ES, FR, GB, IT, LI, NL
     JP 09508057         T2   19970819       JP 1995-519031    19950110
     ES 2139187          T3   20000201       ES 1995-907964    19950110
     US 6034290          A    20000307       US 1999-277094    19990326
     US 2003176729       A1   20030918       US 2002-322786    20021218
     US 6680406          B2   20040120
     US 2004068146       A1   20040408       US 2003-680838    20031007
     US 2004072671       A1   20040415       US 2003-680334    20031007
     US 2004072672       A1   20040415       US 2003-680337    20031007
     US 2004072673       A1   20040415       US 2003-680816    20031007
PRIORITY APPLN. INFO.:                    US 1994-180250   A  19940112
                                          US 1994-362063   A  19941222
                                          WO 1995-US12     W  19950110
                                          US 1995-574751   A2 19951219
                                          WO 1995-US16566  A  19951220
                                          US 1996-683998   A3 19960719
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                                          US 1999-324931   A3 19990603
                                          US 2000-670530   A3 20000927
                                          US 2002-322786   A3 20021218
```

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                  CA/CAplus
 NEWS  5  FEB 05  German (DE) application and patent publication number format
                  changes
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 NEWS  7  MAR 03  MEDLINE file segment of TOXCENTER reloaded
 NEWS  8  MAR 03  FRANCEPAT now available on STN
 NEWS  9  MAR 29  Pharmaceutical Substances (PS) now available on STN
 NEWS 10  MAR 29  WPIFV now available on STN
 NEWS 11  MAR 29  No connect hour charges in WPIFV until May 1, 2004
 NEWS 12  MAR 29  New monthly current-awareness alert (SDI) frequency in RAPRA

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               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 13 APRIL 2004
 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS INTER    General Internet Information
 NEWS LOGIN    Welcome Banner and News Items
 NEWS PHONE    Direct Dial and Telecommunication Network Access to STN
 NEWS WWW      CAS World Wide Web Site (general information)

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FULL ESTIMATED COST                                         0.21      0.21

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FILE COVERS 1907 - 17 Apr 2004  VOL 140 ISS 17
FILE LAST UPDATED: 16 Apr 2004  (20040416/ED)

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.


=> s Nafion or perfluorinated ion (1a) exchang?
          7143 NAFION
            27 NAFIONS
          7146 NAFION
                 (NAFION OR NAFIONS)
          4537 PERFLUORINATED
       1043810 ION
        659105 IONS
       1388882 ION
                 (ION OR IONS)
           138 PERFLUORINATED ION
                 (PERFLUORINATED(W)ION)
        620975 EXCHANG?
           129 PERFLUORINATED ION (1A) EXCHANG?
L1        7207 NAFION OR PERFLUORINATED ION (1A) EXCHANG?

=> s l1 and acylat?
         70668 ACYLAT?
L2          46 L1 AND ACYLAT?

=> s l2 and (silica or alumina or titania or zirconia or chromia or chromic oxide
or iron oxide)
        434084 SILICA
          3296 SILICAS
        434444 SILICA
                 (SILICA OR SILICAS)
        246756 ALUMINA
          2386 ALUMINAS
        247020 ALUMINA
                 (ALUMINA OR ALUMINAS)
         67309 TITANIA
            38 TITANIAS
         67313 TITANIA
                 (TITANIA OR TITANIAS)
         61970 ZIRCONIA
           266 ZIRCONIAS
         62001 ZIRCONIA
                 (ZIRCONIA OR ZIRCONIAS)
          6649 CHROMIA
             7 CHROMIAS
          6649 CHROMIA
                 (CHROMIA OR CHROMIAS)
         17090 CHROMIC
            13 CHROMICS
         17102 CHROMIC
                 (CHROMIC OR CHROMICS)
       1464339 OXIDE
        313962 OXIDES
       1554881 OXIDE
                 (OXIDE OR OXIDES)
          2381 CHROMIC OXIDE
                 (CHROMIC(W)OXIDE)
        881035 IRON
         11085 IRONS
        881804 IRON
                 (IRON OR IRONS)
       1464339 OXIDE
        313962 OXIDES
       1554881 OXIDE
                 (OXIDE OR OXIDES)
         84341 IRON OXIDE
                 (IRON(W)OXIDE)
L3          17 L2 AND (SILICA OR ALUMINA OR TITANIA OR ZIRCONIA OR CHROMIA OR
               CHROMIC OXIDE OR IRON OXIDE)

=> s l3 and Nafion
          7143 NAFION
            27 NAFIONS
          7146 NAFION
                 (NAFION OR NAFIONS)
L4          17 L3 AND NAFION

=> d l4 ibib ab 1-17

L4   ANSWER 1 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2003:925200  CAPLUS
DOCUMENT NUMBER:          140:183564
TITLE:                    Alkylation of 1,3,5-trimethylbenzene with
                          γ-butyrolactone over heteropoly acid catalysts
AUTHOR(S):                Mao, Jianxin; Kamiya, Yuichi; Okuhara, Toshio
CORPORATE SOURCE:         Graduate School of Environmental Earth Science,
                          Hokkaido University, Sapporo, 060-0810, Japan
SOURCE:                   Applied Catalysis, A: General (2003), 255(2), 337-344
                          CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER:                Elsevier Science B.V.
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
AB   A Friedel-Crafts-type reaction of 1,3,5-trimethylbenzene with
     γ-butyrolactone was conducted over various solid acid catalysts such
     as zeolites, polymer resins, and heteropolyacids.  The alkylation to
     4-(2,4,6-trimethylphenyl) butyric acid proceeded exclusively with these
     catalysts; no acylation to the ketone occurred.  The
     heteropolyacids, such as H3PW12O40 and H4SiW12O40, were superior in
     activity to the other catalysts; they also accelerated the reaction of the
     product acid with γ-butyrolactone to the corresponding carboxylic
     acid.  When the heteropolyacids were supported on silica,
     alkylation proceeded efficiently with high mass balance, suppressing
     further reaction.  The reusability of the supported heteropolyacids also
     was confirmed.
REFERENCE COUNT:          24    THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 2 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2001:914429  CAPLUS
DOCUMENT NUMBER:          136:264773
TITLE:                    Solid acid catalysis using ion-exchange resins
AUTHOR(S):                Harmer, Mark A.; Sun, Qun
CORPORATE SOURCE:         DuPont de Nemours and Company, DuPont Central Research
                          and Development, Wilmington, DE, 19880, USA
SOURCE:                   Applied Catalysis, A: General (2001), 221(1-2), 45-62
```

CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review article describing the use of com. available polymeric ion-exchange resins for a range of industrially important transformations. Recent developments both on the materials design and applications will be described. Examples of high catalytic activity will be described in areas ranging from alkylation, transalkylation, isomerization, oligomerization, **acylation**, esterification and nitration. The two main classes of ion-exchange resins are based upon styrene-based sulfonic acids (Amberlyst and Dow type resins), which show high activity in the areas of esterification and etherification, to the perfluorosulfonic acid-based catalysts including the recently developed **Nafion** resin/ **silica** nanocomposites. These show high activity in the area of linear alkyl benzene formation, isomerization, and some select **acylation** type chemistries. These new types of catalysts (which were used com.) are adding to the ever-growing portfolio of highly active solid acid catalysts, which couple both economic and environmental drivers to improve organic transformations within the chemical industry.

REFERENCE COUNT: 100 THERE ARE 100 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:780130 CAPLUS
DOCUMENT NUMBER: 136:231919
TITLE: Zeolite coated structures for the **acylation** of aromatics
AUTHOR(S): Beers, A. E. W.; Nijhuis, T. A.; Kapteijn, F.; Moulijn, J. A.
CORPORATE SOURCE: Industrial Catalysis, Delft University of Technology, Delft Chem Tech, Delft, NL-2628 BL, Neth.
SOURCE: Microporous and Mesoporous Materials (2001), 48(1-3), 279-284
CODEN: MIMMFJ; ISSN: 1387-1811
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Zeolites H-BEA, H-FAU and **Nafion/silica** composites show high activity in the **acylation** of anisole with octanoic acid. A study of activity, surface area characteristics and acidity of zeolite H-BEA shows that mesoporosity and the Si/Al ratio are very important features for activity. Coating a monolithic carrier by a convenient coating procedure with BEA results in an active and selective integrated catalyst-reactor configuration for the **acylation** of aroms. Monolithic substrate CP 811E (Zeolyst) had dimensions of 5 cm in length, 4.3 cm in diameter, cell d. 62 cells/cm, cross section of channels 1.08 x 1.08 mm2 and a wall thickness of 165 µm. The monolithic material was calcined and dipped into a coating material prepared from Zeolyst CP 811E-75 (BEA zeolite), solvent and binder. Due to the binding capacity of the **silica** binder a mech. stable coating layer was obtained.

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:740313 CAPLUS
DOCUMENT NUMBER: 136:71494
TITLE: Industrial application of **Nafion**-systems in rearrangement-aromatisation, transesterification, alkylation, and ring-closure reactions
AUTHOR(S): Schneider, M.; Zimmermann, K.; Aquino, F.; Bonrath, W.
CORPORATE SOURCE: Vitamins and Fine Chemicals Division, Chemical Process

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                         Technology, F. Hoffmann-La Roche Ltd., Basel, CH-4070,
                         Switz.
SOURCE:                  Applied Catalysis, A: General (2001), 220(1-2), 51-58
                         CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER:               Elsevier Science B.V.
DOCUMENT TYPE:           Journal
LANGUAGE:                English
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AB **Nafion**, a perfluorinated sulfonic acid ion-exchange polymer, is known to be a very strong Bronsted acid. Thus, **Nafion** NR 50 and **Nafion**/SiO2 with 15 weight % **Nafion**-loading were selected, in order to elucidate the potential for rearrangement-aromatization of ketoisophorone (KIP) to 2,3,5-trimethylhydroquinone diacetate (TMHQ-DA) in presence of acetic acid anhydride as **acylating** agent, transesterification of TMHQ-DA to 2,3,6-trimethylhydroquinone monoacetate (TMHQ-1-MA) and reaction of isophytol (IP) with trimethylhydroquinone (TMHQ) to (all-rac)-α-tocopherol. For the rearrangement-aromatization of KIP to TMHQ-DA supported **Nafion**/SiO2 was markedly more active than the unsupported **Nafion** NR 50. Both **Nafion**-systems generally revealed remarkably high selectivity, which ranged up to 94 GC-a% TMHQ-DA at high conversion. The major side-product was 3,4,5-trimethylcatechol diacetate. In case of **Nafion**/SiO2, pre-treatment under vacuum and especially grinding of the extrudates seemed to increase activity at comparably high selectivity. Recycling **Nafion**/SiO2 after filtering and rinsing with acetic acid anhydride led to gradually decreasing activity. Without intermediate isolation of TMHQ-DA, **Nafion**/SiO2 was active and selective for the formation of TMHQ-1-MA. Using the **Nafion** systems in the reaction of IP and TMHQ revealed that remarkably high conversion of IP (>95%) and compared with zinc chloride/Bronsted acid or BF3-catalyzed reaction good yields (≈92%) and selectivities were obtained. We found a strong dependency on the solvent polarity. In further expts., the recovery of the catalyst was tested.

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REFERENCE COUNT:         21    THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 5 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        2000:763014  CAPLUS
DOCUMENT NUMBER:         134:29045
TITLE:                   Structured catalysts for the acylation of
                         aromatics
AUTHOR(S):               Beers, Annemarie E. W.; Hoek, I.; Nijhuis, T. A.;
                         Downing, R. S.; Kapteijn, F.; Moulijn, J. A.
CORPORATE SOURCE:        Section Industrial Catalysis, Department of Chemical
                         Technology, Delft University of Technology, Delft,
                         2628 BL, Neth.
SOURCE:                  Topics in Catalysis (2000), 13(3), 275-280
                         CODEN: TOCAFI; ISSN: 1022-5528
PUBLISHER:               Baltzer Science Publishers
DOCUMENT TYPE:           Journal
LANGUAGE:                English
```

AB In the **acylation** of anisole with octanoic acid, **Nafion** **/silica** composites were the most active slurry catalysts, compared to zeolite catalysts. Monolithic structures were coated successfully with **Nafion**. Tested in the **acylation**, these structured catalysts exhibited similar high activities, eliminating the disadvantages (attrition, filtration, regeneration) of a slurry system operation.

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REFERENCE COUNT:         23    THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 6 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        2000:627034  CAPLUS
DOCUMENT NUMBER:         133:309730
TITLE:                   Highly promising activity of Nafion/
```

silica composite catalyst in **acylation** reactions
AUTHOR(S): Heidekum, Alfred; Harmer, Mark A.; Hoelderich, Wolfgang F.
CORPORATE SOURCE: Chemical Technology and Heterogeneous Catalysis, University of Technology Aachen, Aachen, 52074, Germany
SOURCE: Studies in Surface Science and Catalysis (2000), 130D(International Congress on Catalysis, 2000, Pt. D), 3441-3445
CODEN: SSCTDM; ISSN: 0167-2991
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 133:309730

AB **Acylations** of anisole and less active aromatic compds., e.g. toluene, o-xylene, and m-xylene, with carboxylic acid chlorides, e.g. PhCH2COCl and PhCH2CH2COCl, were studied over highly dispersed strongly acidic ion-exchange resin based on **Nafion**, where 13wt% of **Nafion** is entrapped within a porous **silica** matrix (SAC 13). This new material exhibits far better **acylation** properties than the original ion-exchange resin, **Nafion** NR 50. Consequently, even less active aromatic compds. can be successfully **acylated**.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:95311 CAPLUS
DOCUMENT NUMBER: 133:121931
TITLE: **Nafion** resin-**silica** nanocomposite solid acid catalysts. Microstructure-processing-property correlations
AUTHOR(S): Harmer, Mark A.; Sun, Qun; Vega, Alexander J.; Farneth, William E.; Heidekum, Alfred; Hoelderich, Wolfgang F.
CORPORATE SOURCE: DuPont Central Research and Development, Wilmington, DE, 19880-0356, USA
SOURCE: Green Chemistry (2000), 2(1), 7-14
CODEN: GRCHFJ; ISSN: 1463-9262
PUBLISHER: Royal Society of Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A solid acid catalyst of **Nafion/silica** nanocomposite was developed which effectively catalyzes a wide range of industrially important reactions, e.g., olefin isomerization, alkylation, **acylation**, Fries reaction, esterification, and benzylation. The microstructure and catalytic activity of the composites are dependent on synthetic conditions, and is related to the extent of dispersion of the **Nafion** resin acid groups within the porous **silica** framework. The use of an in situ sol-gel technique is preferred over infiltration of a pre-formed support with a **Nafion** solution for fabrication of the composites. Solid state NMR, electron microscopy, and temperature programmed desorption were used to elucidate the chemical environment and dispersion of acid sites. In the case of alkylations (such as formation of linear alkyl benzenes), transalkylation and **acylation** chemical, the catalyst activity increased several fold using a catalyst in which the **Nafion** resin was slightly aggregated. A highly dispersed form of **Nafion** resin within **silica** is preferred for dimerization processes. In the case of olefin isomerization, variations in the **Nafion** resin dispersion have little effect upon catalytic activity. A correlation of microstructure-processing-properties is described.

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REFERENCE COUNT:         37    THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 8 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        1999:704464  CAPLUS
DOCUMENT NUMBER:         132:122344
TITLE:                   Nafion/Silica Composite Material
                         Reveals High Catalytic Potential in Acylation
                         Reactions
AUTHOR(S):               Heidekum, Alfred; Harmer, Mark A.; Hoelderich,
                         Wolfgang F.
CORPORATE SOURCE:        Department of Chemical Technology and Heterogeneous
                         Catalysis, University of Technology RWTH Aachen,
                         Aachen, 52074, Germany
SOURCE:                  Journal of Catalysis (1999), 188(1), 230-232
                         CODEN: JCTLA5; ISSN: 0021-9517
PUBLISHER:               Academic Press
DOCUMENT TYPE:           Journal
LANGUAGE:                English
OTHER SOURCE(S):         CASREACT 132:122344
AB   Entrapping nanosized Nafion particles in a silica
     matrix enhances the accessibility of the acid sites in comparison with the
     original material, Nafion NR 50.  The acylation of
     anisole by acid chlorides is very satisfactory with short reaction times
     and very high selectivity.  Even less active aromatic compds. such as m- and
     o-xylene are successfully acylated.  (c) 1999 Academic Press.
REFERENCE COUNT:         18    THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 9 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        1999:113595  CAPLUS
DOCUMENT NUMBER:         130:169811
TITLE:                   Process for the preparation of a catalytic
                         microcomposite from a silicate and a highly
                         fluorinated ion exchange resin
INVENTOR(S):             Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S):      E. I. Du Pont de Nemours & Co., USA
SOURCE:                  PCT Int. Appl., 28 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:

     PATENT NO.          KIND  DATE          APPLICATION NO.   DATE
     ---------------     ----  --------      ---------------   --------
     WO 9906145           A1   19990211      WO 1998-US15760   19980729
         W:  AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GE, HU,
             ID, IL, IS, JP, KG, KP, KR, KZ, LC, LK, LR, LT, LV, MD, MG, MK,
             MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, SL, TJ, TM, TR, TT, UA,
             US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES,
             FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,
             CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     AU 9886015           A1   19990222      AU 1998-86015     19980729
     EP 1011861           A1   20000628      EP 1998-937265    19980729
     EP 1011861           B1   20011024
         R:  BE, CH, DE, ES, FR, GB, IT, LI, NL
     JP 2001511478        T2   20010814      JP 2000-504948    19980729
     ES 2165182           T3   20020301      ES 1998-937265    19980729
     US 6281400           B1   20010828      US 2000-462970    20000114
PRIORITY APPLN. INFO.:                    US 1997-54102P    P  19970729
                                          WO 1998-US15760   W  19980729
AB   The present invention relates to a process for preparing a microcomposite
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     comprising a highly fluorinated ion-exchange polymer containing pendant
     sulfonate functional groups, said polymer existing as aggregated particles
     entrapped within and dispersed throughout a network of silica.
     These microcomposites are manufactured by contacting water containing the ion
     exchanger with water containing ≥1 of Na silicate, NH4 silicate, and K
     silicate and allowing the silicate toe form a network of silica.
     Due to their high surface area and acid functionality, these
     microcomposites possess wide utility as improved solid acid catalysts,
     particularly in the substitution of aromatic compds., in the decomposition of
     hydroperoxides, and in the isomerization of olefins.
REFERENCE COUNT:         5      THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 10 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        1998:793076  CAPLUS
DOCUMENT NUMBER:         130:40784
TITLE:                   Perfluorinated ion-
                         exchange microcomposite catalysts modified
                         with Lewis acid
INVENTOR(S):             Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S):      E. I. Du Pont de Nemours & Co., USA
SOURCE:                  PCT Int. Appl., 20 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
     WO 9853911         A1   19981203       WO 1998-US10760  19980527
         W:  AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
             DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG,
             KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,
             NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
             UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES,
             FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,
             CM, GA, GN, ML, MR, NE, SN, TD, TG
     US 5932511         A    19990803       US 1998-70041    19980430
     AU 9876973         A1   19981230       AU 1998-76973    19980527
     EP 984832          A1   20000315       EP 1998-924913   19980527
     EP 984832          B1   20030402
         R:  BE, CH, DE, ES, FR, GB, IT, LI, NL
     JP 2002500560      T2   20020108       JP 1999-500855   19980527
     US 6133493         A    20001017       US 1999-306277   19990506
PRIORITY APPLN. INFO.:                   US 1997-47969P   P  19970528
                                         US 1998-70041    A  19980430
                                         WO 1998-US10760  W  19980527
AB   This invention concerns a modified porous microcomposite comprising a
     perfluorinated ion-exchange polymer entrapped
     within and highly dispersed throughout a network of inorg. oxide wherein
     the network and optionally the pendant groups of the polymer were modified
     with a Lewis acid.  These modified microcomposites can be used in catalyst
     compns. for various chemical processes, such as in the alkylation or
     acylation of aroms.
REFERENCE COUNT:         3      THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
                                RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 11 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        1998:689189  CAPLUS
DOCUMENT NUMBER:         129:318232
TITLE:                   Porous microcomposite of perfluorinated
                         ion-exchange polymer and dispersed
                         metal oxide and/or silica derived via a
                         sol-gel process
INVENTOR(S):             Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S):      E. I. Du Pont de Nemours & Co., USA
SOURCE:                  U.S., 24 pp., Cont.-in-part of U.S. Ser. No. 362,063,
                         abandoned.
                         CODEN: USXXAM
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  4
PATENT INFORMATION:

     PATENT NO.        KIND  DATE            APPLICATION NO.   DATE
     ---------------   ----  --------        ---------------   --------
     US 5824622         A    19981020        US 1995-574751    19951219
     ES 2139187         T3   20000201        ES 1995-907964    19950110
     WO 9619288         A1   19960627        WO 1995-US16566   19951220
         W:  CN, JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     EP 799091          A1   19971008        EP 1995-944346    19951220
     EP 799091          B1   19980902
         R:  DE, FR, GB, IT, NL
     CN 1170373         A    19980114        CN 1995-196956    19951220
     CN 1082940         B    20020417
     US 5916837         A    19990629        US 1996-683998    19960719
     US 5948946         A    19990907        US 1998-121106    19980723
     US 6034290         A    20000307        US 1999-277094    19990326
     US 6160190         A    20001212        US 1999-324931    19990603
     US 6515190         B1   20030204        US 2000-670530    20000927
     US 2003176729      A1   20030918        US 2002-322786    20021218
     US 6680406         B2   20040120
     US 2004068146      A1   20040408        US 2003-680838    20031007
     US 2004072671      A1   20040415        US 2003-680334    20031007
     US 2004072672      A1   20040415        US 2003-680337    20031007
     US 2004072673      A1   20040415        US 2003-680816    20031007
PRIORITY APPLN. INFO.:                  US 1994-180250    B2 19940112
                                        US 1994-362063    B2 19941222
                                        WO 1995-US12      A  19950110
                                        US 1995-574751    A  19951219
                                        WO 1995-US16566   W  19951220
                                        US 1996-683998    A3 19960719
                                        US 1998-121106    A3 19980723
                                        US 1999-324931    A3 19990603
                                        US 2000-670530    A3 20000927
                                        US 2002-322786    A3 20021218
AB   Porous microcomposites are described which comprise a
     perfluorinated ion-exchange polymer (PFIEP)
     containing pendant sulfonic acid and/or carboxylic acid groups entrapped in a
     highly dispersed network of metal oxide and/or silica.  The
     microcomposites are prepared from PFIEP (especially NAFION NR 005) and
     ≥1 precursors selected from a metal oxide precursor (e.g., aluminum
     tri(sec-butoxide)) and/or a silica precursor (e.g.,
     tetramethoxysilane) using an in situ process.  The microcomposites have a
     first set of pores having pore size diameter 0.5-75 nm and may further
     comprise a second set of pores having diameter 75-1000 nm.  These
     microcomposites possess high surface area and exhibit high catalytic
     activity for a variety of reactions including nitration, esterification,
     dimerization, alkylation, polymerization, acylation and isomerization.
REFERENCE COUNT:         36    THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 12 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        1998:661524  CAPLUS
DOCUMENT NUMBER:         129:266138
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TITLE:                          Silylated perfluorinated ion-
                                exchange microcomposite catalysts
INVENTOR(S):                    Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S):             E. I. Du Pont de Nemours & Co., USA
SOURCE:                         PCT Int. Appl., 13 pp.
                                CODEN: PIXXD2
DOCUMENT TYPE:                  Patent
LANGUAGE:                       English
FAMILY ACC. NUM. COUNT:         1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.   DATE
     ---------------   ----  --------       ---------------   --------
     WO 9842439         A1   19981001       WO 1998-US5544    19980319
         W:  CA, JP, US
         RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     EP 969926          A1   20000112       EP 1998-913006    19980319
     EP 969926          B1   20020605
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, PT, IE, FI
     JP 2001518836      T2   20011016       JP 1998-543274    19980319
     AT 218395          E    20020615       AT 1998-913006    19980319
     US 6169053         B1   20010102       US 1999-381541    19990921
PRIORITY APPLN. INFO.:                   US 1997-42768P    P  19970326
                                         WO 1998-US5544    W  19980319
AB   This invention concerns a silylated porous microcomposite comprising a
     perfluorinated ion-exchange polymer entrapped
     within and highly dispersed throughout a network of inorg. oxide wherein
     the network and optionally the polymer have been modified with a
     silylating agent.  These silylated microcomposites can be used in
     heterogeneous catalyst compns. for various chemical processes, such as in
     esterifications and acylations.
REFERENCE COUNT:                3     THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
                                      RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 13 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:               1997:659719  CAPLUS
DOCUMENT NUMBER:                127:320607
TITLE:                          Unique silane modified perfluorosulfonic acids as
                                versatile reagents for new solid acid catalysts
AUTHOR(S):                      Harmer, Mark A.; Sun, Qun; Michalczyk, Michael J.;
                                Yang, Zhenyu
CORPORATE SOURCE:               Central Research and Development, DuPont Company,
                                Wilmington, DE, 19880-0356, USA
SOURCE:                         Chemical Communications (Cambridge) (1997), (18),
                                1803-1804
                                CODEN: CHCOFS; ISSN: 1359-7345
PUBLISHER:                      Royal Society of Chemistry
DOCUMENT TYPE:                  Journal
LANGUAGE:                       English
AB   A new versatile reagent, a perfluorosulfonate/trisilanol
     [(OH)3Si(CH2)3(CF2)2O(CF2)2SO3-M+], is synthesized and a series of
     surface-bound strong solid acid catalysts developed which are active for
     catalyzing a range of reactions (e.g., alkene isomerization, alkylations,
     and acylations).  This catalyst, when bound on SiO2, showed
     significantly higher activity for benzene and toluene alkylation, m-xylene
     benzoylation, and isomerization of 1-butene than Nafion NR50 and
     Amberlyst-15 catalysts.
REFERENCE COUNT:                11    THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS
                                      RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 14 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:               1997:490142  CAPLUS
TITLE:                          Organic reactions over Nafion in
                                silica composite catalysts.
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AUTHOR(S): Heidekum, A.; Harmer, M. A.; Hoelderich, W. F.
CORPORATE SOURCE: Department Chemical Technology and Heterogeneous Catalysis, RWTH, Aachen, 52074, Germany
SOURCE: Book of Abstracts, 214th ACS National Meeting, Las Vegas, NV, September 7-11 (1997), PETR-104. American Chemical Society: Washington, D. C.
CODEN: 64RNAO
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

AB The use of high acidic ion-exchange resin **Nafion** NR 50 in organic reaction often fails because of its low surface area. Embedding nano-sized **Nafion** particles in high porous **silica** achieves a surface area of about 350m2/g. This new material exhibits improved diffusion properties and could be a competitive alternative to traditional superacid catalysts. We studied several reactions of industrial innterest such as the dimerization of α-methylstyrene, the Fries rearrangement of Ph acetate as well as other **acylation** reactions. The reactions have been carried out in liquid phase at various temps. and and loadings. In all expts. the new material is superior in activity than the genuine ion-exchange resin. Furthermore the results obtained have been compared with the performance of zeolititc catalysts in such kind of reactions.

L4 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:527339 CAPLUS
DOCUMENT NUMBER: 125:171500
TITLE: Sol-gel derived porous microcomposites of **perfluorinated ion-exchange** polymer and metal oxide as catalyst for organic reactions and their preparation
INVENTOR(S): Harmer, Mark Andrew; Sun, Qun
PATENT ASSIGNEE(S): E. I. Du Pont de Nemours & Co., USA
SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

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     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
     WO 9619288         A1   19960627       WO 1995-US16566  19951220
         W:  CN, JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     US 5824622         A    19981020       US 1995-574751   19951219
     EP 799091          A1   19971008       EP 1995-944346   19951220
     EP 799091          B1   19980902
         R:  DE, FR, GB, IT, NL
     US 6034290         A    20000307       US 1999-277094   19990326
PRIORITY APPLN. INFO.:                   US 1994-362063   A  19941222
                                         US 1995-574751   A  19951219
                                         US 1994-180250   B2 19940112
                                         WO 1995-US12     A  19950110
                                         WO 1995-US16566  W  19951220
                                         US 1996-683998   A3 19960719
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AB Porous microcomposites, having high surface area, pendant sulfonic and/or carboxylic acid groups entrapped within and highly dispersed throughout, and pore size 0.5-1000 nm, are prepared from **perfluorinated ion-exchange** polymer and metal oxides such as **silica** using the sol-gel process. The microcomposites are useful as catalysts for olefin isomerization, hydrocarbon alkylation, nitration or sulfonation of organic compds., etc. Thus, a 5% solution of **Nafion** NR 005 [.apprx.6.3:1 tetrafluoroethylene-perfluoro(3,6-dioxa-4-methyl-7-octenesulfonyl fluoride) copolymer] and a solution of tetramethoxysilane were stirred together and formed a gel in .apprx.10 s. The gel was processed and acidified giving a fine particle, light-yellow glasslike material (.apprx.13:87 **Nafion-silica**) having a BET surface area of 123 m2/g and average pore diameter 22 nm, which (2.5 g) was used to catalyze the isomerization of 1-butene at 50°, WHSV 0.4/h, and 2:1 He-1-butene flow, giving trans-2-butene 66.3, cis-2-butene 26.8, and 1-butene 6.9%.

L4 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER:	1996:464450 CAPLUS
DOCUMENT NUMBER:	125:90851
TITLE:	High Surface Area **Nafion** Resin/ **Silica** Nanocomposites: A New Class of Solid Acid Catalyst
AUTHOR(S):	Harmer, Mark A.; Farneth, William E.; Sun, Qun
CORPORATE SOURCE:	Central Research and Development, DuPont Company, Wilmington, DE, 19880-0356, USA
SOURCE:	Journal of the American Chemical Society (1996), 118(33), 7708-7715 CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER:	American Chemical Society
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB A novel nanocomposite of **Nafion** NR 50 (**perfluorinated ion-exchange** polymer) resin was prepared, in which small (20-60 nm) diameter **Nafion** resin particles are entrapped within a porous **silica** network. This material combined the excellent solid acid catalyst properties of **Nafion** resin with the desirable porous support characteristics of **silica**, with a BET surface of 150-500 mg/g. Assuming the **Nafion** resin particles to be dense spheres, the effective surface area of the **Nafion** resin alone was estd, at 153 (for 20 nm spheres) to 50 (60 nm spheres) m2/g. This material was developed using an in-situ sol-gel technique in which solns. of **Nafion** resin were mixed with soluble silicon sources to form a gel, which is dried to a clear hard glass-like material. These new porous nanocomposites offer the potential for significantly enhanced activity due to the increased accessibility of the **Nafion** resin-based acid sites. Examples of catalytic reactions were given in which the activity per unit weight of **Nafion** resin were at least 100 times higher in the composite than the pure polymer alone.

L4 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER:	1995:909497 CAPLUS
DOCUMENT NUMBER:	123:290381
TITLE:	Sol-gel derived porous microcomposite of **perfluorinated ion-exchange** polymers and metal oxides as process catalysts
INVENTOR(S):	Harmer, Mark Andrew
PATENT ASSIGNEE(S):	du Pont de Nemours, E. I., and Co., USA
SOURCE:	PCT Int. Appl., 64 PP. CODEN: PIXXD2
DOCUMENT TYPE:	Patent
LANGUAGE:	English
FAMILY ACC. NUM. COUNT:	4

PATENT INFORMATION:

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     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
     WO 9519222         A1   19950720      WO 1995-US12     19950110
         W:  JP
         RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE
     EP 739239          A1   19961030      EP 1995-907964   19950110
     EP 739239          B1   19990915
         R:  BE, CH, DE, ES, FR, GB, IT, LI, NL
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JP 09508057	T2	19970819	JP 1995-519031	19950110
ES 2139187	T3	20000201	ES 1995-907964	19950110
US 6034290	A	20000307	US 1999-277094	19990326
US 2003176729	A1	20030918	US 2002-322786	20021218
US 6680406	B2	20040120		
US 2004068146	A1	20040408	US 2003-680838	20031007
US 2004072671	A1	20040415	US 2003-680334	20031007
US 2004072672	A1	20040415	US 2003-680337	20031007
US 2004072673	A1	20040415	US 2003-680816	20031007

PRIORITY APPLN. INFO.:	US 1994-180250	A	19940112
	US 1994-362063	A	19941222
	WO 1995-US12	W	19950110
	US 1995-574751	A2	19951219
	WO 1995-US16566	A	19951220
	US 1996-683998	A3	19960719
	US 1998-121106	A3	19980723
	US 1999-324931	A3	19990603
	US 2000-670530	A3	20000927
	US 2002-322786	A3	20021218

AB Porous microcomposites are prepared from (**NAFION**) **perfluorinated ion-exchange** polymers with pendant sulfonic and carboxylic acid groups and metal oxides (**silica**, **alumina**, **titania**, etc.) using the sol-gel process. Such microcomposites possess high surface area and exhibit extremely high catalytic activity, e.g., for nitration of aroms., esterification of acids, styrene dimerization, alkylation or **acylation** of aroms.